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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/631,353

07/30/2003

Zohar Bogin

42P9412D

3467

8791

7590

01/14/2005

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EXAMINER

MCLEAN MAYO, KIMBERLY N

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/631,353	<b>Applicant(s)</b> BOGIN ET AL.	
	<b>Examiner</b> Kimberly N. McLean-Mayo	<b>Art Unit</b> 2187	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. The enclosed detailed action is in response to the Amendment submitted on October 25, 2004.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Proebsting (USPN: 6,356,485 B1) in view of Chauvel et al. (USPN: 6,728,838).

Regarding claims 1, 4, 6, 7 and 9, Proebsting discloses an apparatus comprising a write cache storage to store write data (Abstract; C 3, L 21-22; C 27, L 19-21; C 114, L 23-25; Figure 1); a flush dispatcher coupled to the write cache storage to dispatch the write data to memory (internal write operation control circuit; C 114, L 42-46); control logic to select a first write data with a first address in the write cache storage for dispatching (comprised of write decision circuit, write data merging circuit); determining if a second write data in the write cache has a second address within a predetermined range of the first address (C 114, L 26-33; write decision circuit); and dispatch the first and the second write data if the second address is within the predetermined range of the first address (C 114, L 34-41; write data merging circuit dispatches data to the flush dispatcher/internal write operation control circuit). Proebsting does not disclose determining if a second write data in the write cache has a second address within a range of the first address of

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less than one page and dispatching the first and the second write data if the second address is within the programmable range of less than a page of the first address. However, Chauvel teaches the concept of determining if a second cache line in the write cache has a second address within a programmable range of the first address of less than one page and dispatching the first and the second cache line if the second address is within the programmable range of the first address (C 15, L 52-67; C 16, L 1-36 - the address range is the range of the block, which is specifiable and thereby programmable). This feature taught by Chauvel provides flexibility by dynamically specifying a range of cache data lines to flush. In Proebsting's system the address range is fixed. Hence, it would have been obvious to one of ordinary skill in the art to use Chauvel's teachings in the system taught by Proebsting for the desirable purpose of flexibility. Additionally, Proebsting does not explicitly disclose a write cache storage for storing cache lines of write data. However, caches are well known in the art for storing data and it is well known that cache memory is faster than DRAM (memory used in Proebsting's system). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a write cache for storing cache lines of write data for the desirable purpose of improved performance afforded by using a faster memory. Additionally, with respect to claim 7, it would have been obvious to one of ordinary skill in the art to store instructions on a machine readable medium which when executed by a processor causes the processor to perform the above functions. Proebsting discloses a hardware implementation of the above functions. However, it is known in the art to implement functions in software (computer readable code) on a machine-readable medium for portability.

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Regarding claims 3, 5 and 8, Proebsting discloses the limitations cited above in claims 1, 4 and 7, however, Proebsting does not explicitly disclose selecting an oldest of the plurality of cache lines. Official notice is taken that this concept is well known in the art as a least recently used algorithm for removing cache lines. This algorithm is well known for its simple and efficient implementation. Hence it would have been obvious to one of ordinary skill in the art to use a least recently used algorithm in Proebsting's system, wherein an oldest cache line is selected, for the desirable purpose of simplicity and efficiency.

#### ***Response to Arguments***

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

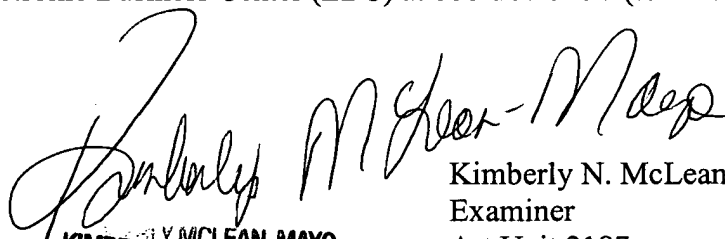
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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly N. McLean-Mayo whose telephone number is 703-308-9592. The examiner can normally be reached on M (10:00 - 6:30); Tues, Thr (10:00 - 4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 703-308-1756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**KIMBERLY MCLEAN-MAYO**  
**PRIMARY EXAMINER**

Kimberly N. McLean-Mayo  
Examiner  
Art Unit 2187

KNM

January 5, 2005